

May 13 , 2002

Barry S. Drucker
Minerals Management Service
381 Elden Street, MS 4030
Herndon, VA 20170-4817

Dear Mr. Drucker:

This letter is the eighth Bi-Monthly Status Letter for Cooperative Agreement Number 1435-01-02-CA-85050, *Field Testing of a Physical/Biological Monitoring Methodology for Offshore Dredging and Mining Operations*.

Task 1: Biology: Robert Diaz and Janet Nestlerode report that fish tissue collected for stable isotope analysis has been processed and sent to the University of California at Davis Stable Isotope Facility for analysis. Invertebrates collected for isotope analysis are currently being identified and processed so that they may also be sent off for analysis. The gut content samples from fishes collected by trawl continue to be analyzed. Video transect analysis continues. They plan post-dredging sampling to take place sometime in June 2003.

Task 2: Shoreline and Beach Studies: Donna Milligan and Scott Hardaway submitted a brief report that is attached to this Bimonthly Status Letter. It should be noted that their work is a joint effort of both this Cooperative Agreement and a separate, continuing Cooperative Agreement, Number 1435-1-98-CA-30934 as modified and extended.

Task 3: Bottom Imagery and Bathymetry: Jesse McNinch continues the work described in the last Status Letter and is planning a short cruise to acquire for post-dredging imagery.

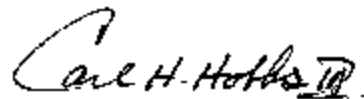
Task 4: Wave Studies: Jerome Maa reports that a purchase order for a Furuno FR8251 x-band radar with a 8 ft long open array antenna, 36 rpm rotating speed, and 15 m long cable was submitted about three weeks ago. He expects delivery before the end of May. Additionally, he had a tripod fabricated for mounting the antenna and plans to install the it on the roof of a VIMS building where it would have a view of the York River in order to gain experience with the system and the software before deploying it to the ocean coast. Software for data acquisition has been further improved and is waiting for the radar for testing. A small device using a 80c251 micro-controller to generate radar signals for simulation will be completed by the middle of May so that Dr. Maa will be able to use both real and generated signals to test the systems. He has begun development of software for image analysis, using pure mathematically generated images. By doing so (*i.e.*, knowing the exact wave

Barry S. Drucker
Minerals Management Service
381 Elden Street, MS 4030
Herndon, VA 20170-4817

field first then the associated radar images), he will have the background truth to check results. So far, he has generated several wave images with uniform wave fields. He will work on the inverse process first, and then, change to random waves for better simulation of reality. The above mentioned software development will be a rather long process that will last at least a year.

Task 5: Project Management. There are no project management issues to report.

Respectfully submitted,

A handwritten signature in black ink, reading "Carl H. Hobbs, III". The signature is written in a cursive style with a large initial "C" and a stylized "H".

Carl H. Hobbs, III
Associate Professor and Project Manager

Copy: MMS: J. Kendall, W. Adcox, J. Rowland, R. Amato
VIMS: R. Diaz, J. Nestlerode, J. McNinch, S. Hardaway, D. Milligan, J. Maa,
C. Harris, M. Fonner

enc:

Shoreline Studies Report from Donna Milligan and Scott Hardaway:

On 23 April 2003, we surveyed the Sandbridge and Dam Neck shoreline with the Pug, a “commercial All Terrain Vehicle (ATV) described in an earlier report and RTK-GPS. We plan to survey again in mid-May. The April survey was the fifth survey completed along this beach as part of the MMS beach monitoring protocol. About 4,500 data points were collected from the southern boundary of Sandbridge at Back Bay north to the firing ranges at Dam Neck (which were in use that day and, thus, limiting access). The points were collected at approximately 5 m spacing along the beach. The tightly spaced points allowed the depiction of small cusps that existed along the beach. Several near-parallel, alongshore lines were run: the water (active) line, the berm, and the backshore/base of dune where it existed.

Data were imported and processed in Trimble’s Geomatics Office system. The points were then exported to Terramodel software which was used to generate a contour alongshore at +1 m NAVD88 which was on the beach face just below the beach berm. This contour was exported as an Esri shape file and imported into Arcview 3.3 where it was overlain on the 1994 digital orthophoto quarter quadrangles (DOQQ). To date, this analysis has only been performed only on the April 2003 data. We plan to process the previous four dates soon.

Figure 1 shows the entire extent of the Pug survey data. The extent of the beach fill to date is clearly discernable particularly since the April 2003 shoreline comes right up to the seawall just north of that area (Figure 2). Figures 2 and 3 are closer views of the data. In Figure 2, the beach cusps are shown in both the 1994 DOQQ and the recent survey data. Figure 3 shows the Little Island pier. Fill has already been placed on the beach in this area. However, several storms over the past few months have reduced the beach width. We hope that our survey data taken in February and March 2003 will depict this.

The February survey took place just after a storm and the March survey took place during a coastal storm. The dune at the Officer’s quarters at Dam Neck provides the most visible consequence of these storms. A time series of photos taken at the site shows the impact of the storm on the beach and dune. Before the first storm in February (Figure 4A and B), the sand fencing was intact and wind-blown sand had accumulated behind it. However, a week later after the storm, a great deal of sand had been removed exposing the pilings of level 1 and partially of level 2 of the walkover. The net change between February 19, 2003 and April 23, 2003 from the beach is shown in Figures 4C and D. Figure 5 shows the alongshore vantage for February 19 (post-storm), March 19 (during storm), April 15 (post storm), and April 23 (post-storm).

Figure 6 shows the preliminary water elevation for the Chesapeake Bay Bridge Tunnel gage between 15 February 2003 and 27 April 2003. The February and April storms are clearly shown in the data. The March data is not so clear, but a wind event did occur. Figure 7 is a view of the shore’s response to the storm of March 19, 2003.

In a separate effort, a contractor surveyed the beach at Dam Neck on April 25, 2003. We are attempting to obtain that data in order to perform a large-scale verification of our procedures for collecting, processes, and presenting the Pug data.



Figure 1.

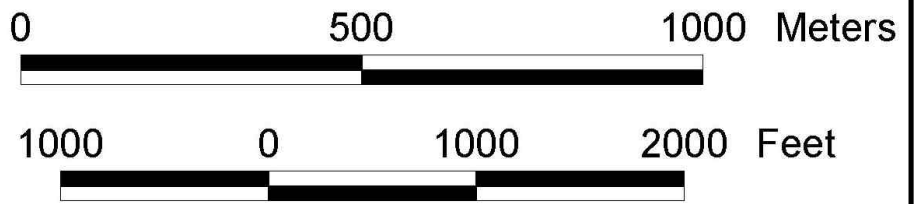


Figure 2.



Figure 3

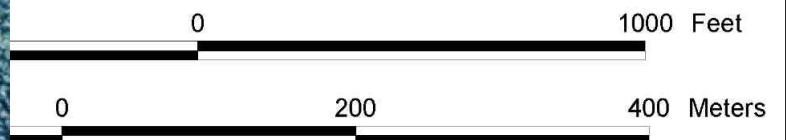




Figure 4.



Figure 5.

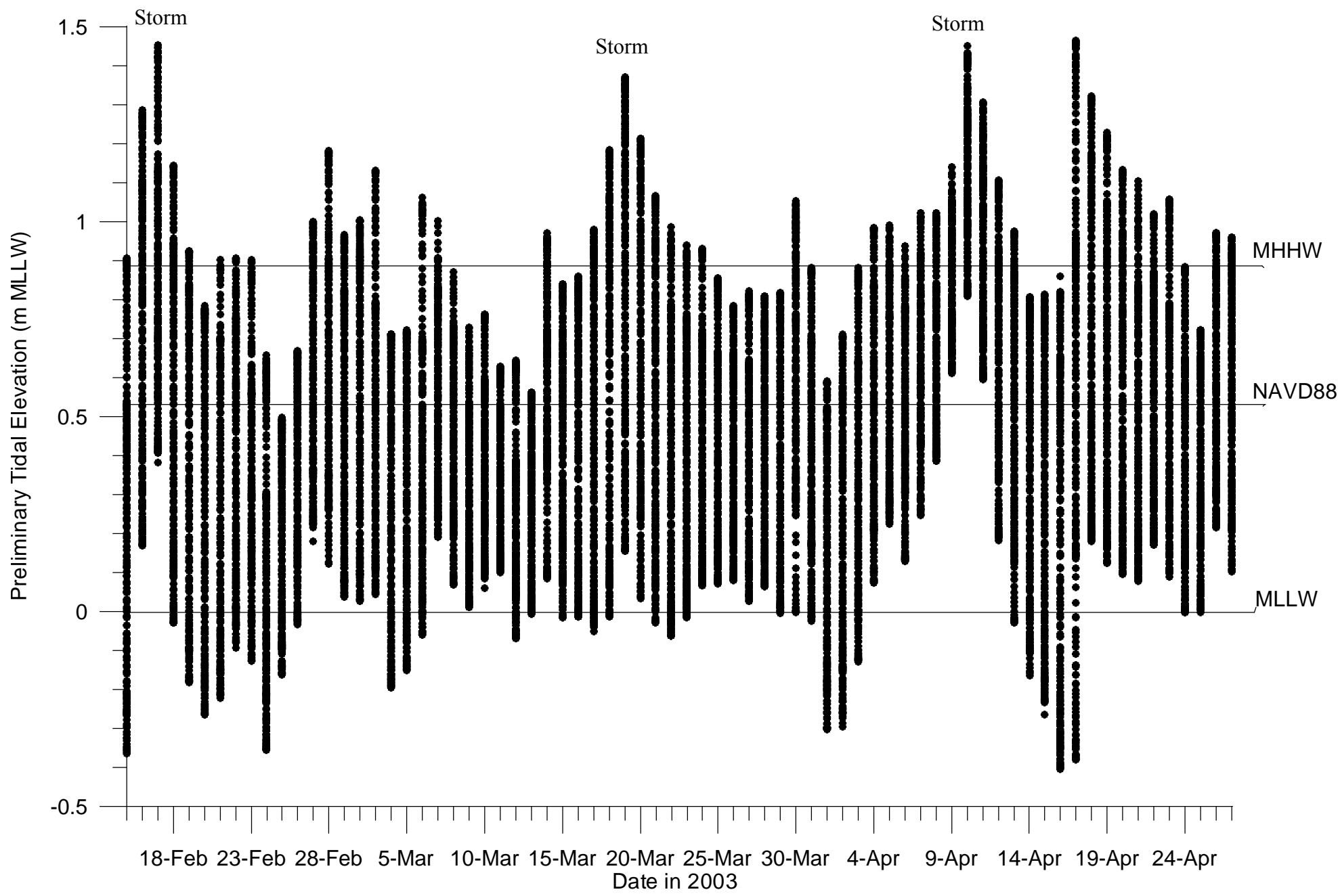


Figure 6.



Figure 7: 19 March 2003 - Reaction of beach fill to storm conditions.